

Tungaloy

Member IMC Group

Keeping the Customer First

Tungaloy Report No. 372-EE

MILLLINE Face milling cutter

NEW

DOPENT

TEN / EEN type

metric

Pentagonal, double sided insert with 10 cutting edges!

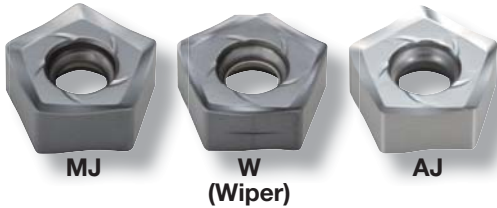


Features

Economical corner unit price × Highly efficient cutting = Production cost reduction!

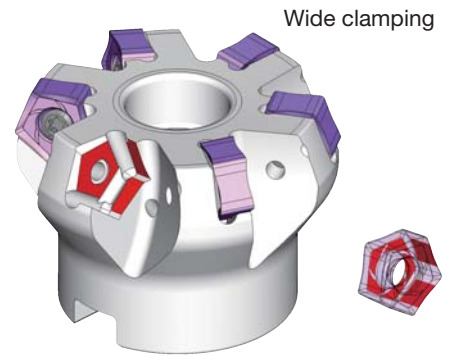
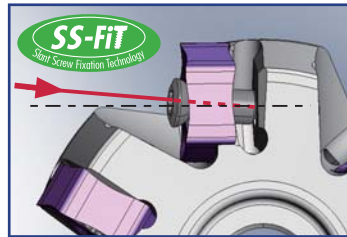
1 10-edged insert

- Pentagonal double sided insert. Economical corner unit price!
- 30% tool cost reduction compared to conventional four edge insert.
- Inserts available in MJ (for general machining), AJ (for aluminum) and Wiper type.



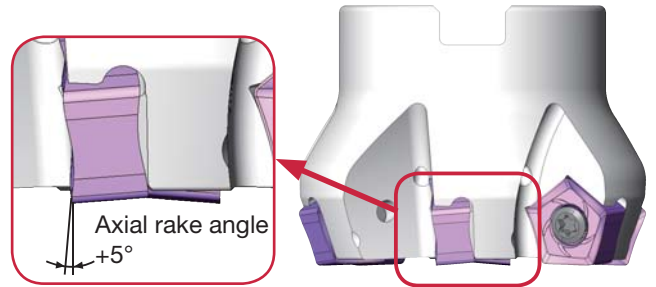
2 High feed rate & cutting efficiency!

- Wide clamping design provides insert stability and enables heavy cutting.
- Thick insert design increases rigidity.
- Tungaloy's SS-Fit system improves strength around the screw hole and increases the insert density (only extra close pitch cutters).



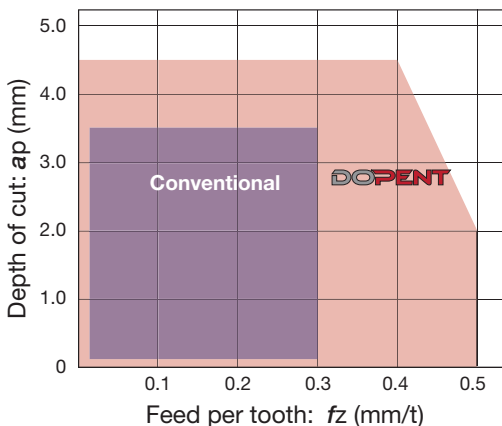
3 Excellent Sharpness!

Despite being an economical negative insert with an inclined cutting edge, the large axial rake angle provides remarkable sharpness.

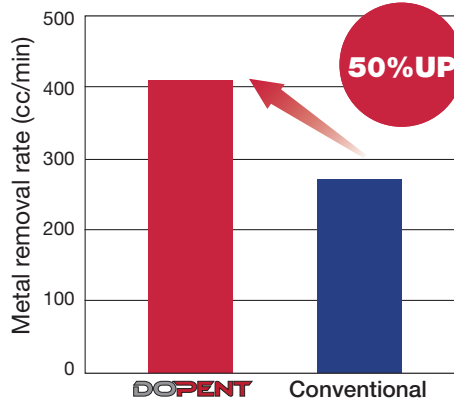


Cutting performance

Comparison of application areas



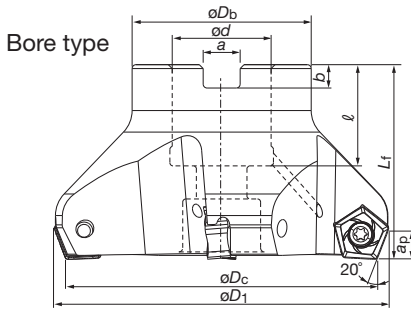
Comparison of cutting condition



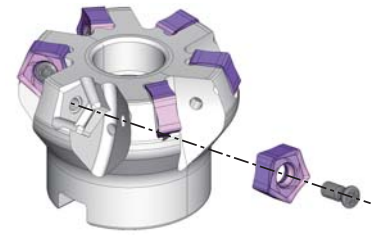
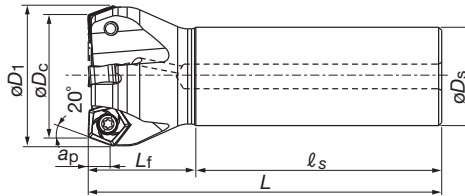
Work material : S55C (200HB)
Tool Ø : Ø100 mm
Cutting speed : $V_c = 200$ m/min
Cutting width : $a_e = 50$ mm
Conventional tool : Positive insert type Face milling cutter

Feed per tooth
DOPENT : $f_z = 0.4$ mm/t (8 tooth)
Conventional : $f_z = 0.3$ mm/t (7 tooth)
Depth of cut : $a_p = 4$ mm

Specification



Shank type



Bore Type Components

Description	Replacement Parts Cat. No.	
Applicable cutter	TEN09R...	TEN09R...
Clamping screw	CSTR-4L100	
Wrench	Torx Bit	BT15S BT15M
	Grip	H-TBS
Mono block type substitution wrench	T-15D	

Bore type

Max. depth of cut : Max. $a_p = 6.4$ mm

Pitch	Cat. No.	Stock	No. of Inserts	Dimensions (mm)								Weight (kg)	Air hole	Center bolt
				ϕD_c	ϕD_1	ϕD_b	ϕd	ℓ	L_f	b	a			
Close	TEN09R050M22.0E04	●	4	50	56	41	22	20	40	6.3	10.4	0.3	with	CM10x30H
	TEN09R063M22.0E06	●	6	63	69	41	22	20	40	6.3	10.4	0.5	with	CM10x30H
	TEN09R080M27.0E07	●	7	80	86	50	27	22	50	7	12.4	0.9	with	CM12x30H
	TEN09R100M32.0E08	●	8	100	106	60	32	28.5	50	8	14.4	1.3	with	TMBA-M16H
	TEN09R125M40.0E10	●	10	125	131	71	40	32	63	9	16.4	2.3	with	TMBA-M20H
	TEN09R160M40.0E12	●	12	160	166	100	40	29	63	9	16.4	4.0	without	-
Extra close	TEN09R050M22.0E06	●	6	50	56	41	22	20	40	6.3	10.4	0.3	with	CM10x30H
	TEN09R063M22.0E08	●	8	63	69	41	22	20	40	6.3	10.4	0.5	with	CM10x30H
	TEN09R080M27.0E10	●	10	80	86	50	27	22	50	7	12.4	1.0	with	CM12x30H
	TEN09R100M32.0E12	●	12	100	106	60	32	28.5	50	8	14.4	1.4	with	TMBA-M16H
	TEN09R125M40.0E16	●	16	125	131	71	40	32	63	9	16.4	2.5	with	TMBA-M20H
	TEN09R160M40.0E20	●	20	160	166	100	40	29	63	9	16.4	4.3	without	-

Shank type

Cat. No.	Stock	No. of Inserts	Dimensions (mm)						Weight (kg)	Air hole	Parts	
			ϕD_c	ϕD_1	ϕD_s	ℓ_s	L_f	L			Clamping screw	Wrench (Substitution)
EEN09R032M32.0-03	○	3	32	38	32	80	35	115	0.7	with	CSTR-4L100	T-15DB (T-15D)
EEN09R040M32.0-04	○	4	40	46	32	80	35	115	0.7	with		
EEN09R050M32.0-04	○	4	50	56	32	80	40	120	0.9	with		
EEN09R063M32.0-06	○	6	63	69	32	80	40	120	1.0	with		
EEN09R080M32.0-07	○	7	80	86	32	80	40	120	1.3	with		

● : Stocked items
○ : Stocked in Japan

Insert Specification

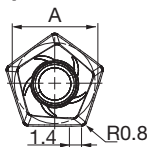


Fig. 1 MJ (General)

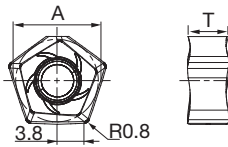


Fig. 2 (Wiper)

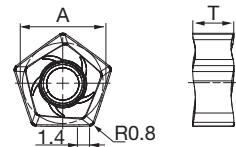


Fig. 3 AJ (For Aluminium)

Cat. No.	Accuracy	Honing	Stock						Carbide	Dimensions (mm)		Shape
			Coated grades					TH10		A	T	
			AH725	AH120	AH140	T3130	T1015					
PNCU0905GNER-MJ	C	with	●	●	●	★	★		12.2	5.9	Fig. 1	
PNCU0905GNER-W	C	with	●						12.2	5.9	Fig. 2	
PNCU0905GNFR-AJ	C	without						●	12.2	6.3	Fig. 3	

★ : Available from 2010

Installation of the extra close pitch cutter inserts

- The extra close pitch cutter has a slanted screw.
- Locate insert and then fasten the screw. (Fig. A)
- Appropriate torque is 3.5 N·m.
- After fastening the screw, please ensure there is no space between the cutter body and insert. (Fig. B)

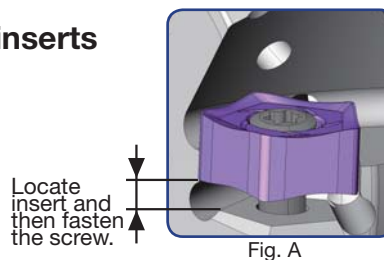


Fig. A

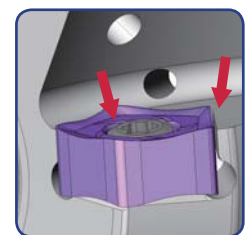


Fig. B

Standard cutting conditions

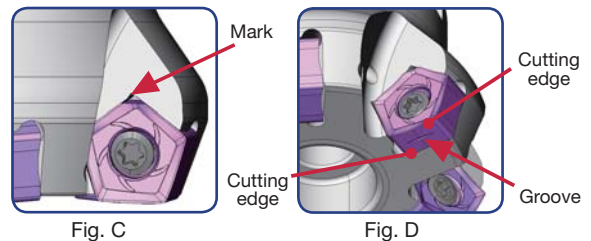
Material	Hardness HB	Situation of selection	Recommending Grade	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
Low Carbon steels (S15C, SS400 etc.)	~ 200	First choice	AH725	180 (100 - 250)	0.3 (0.2 - 0.6)
		Priority on impact resistance	AH140	130 (80 - 180)	
		Priority on wear resistance	T3130	200 (120 - 250)	
High Carbon steels (S45C, S55C etc.)	200 ~ 300	First choice	AH725	150 (100 - 230)	0.28 (0.2 - 0.5)
		Priority on impact resistance	AH140	130 (80 - 180)	
		Priority on wear resistance	T3130	180 (120 - 250)	
Alloyed Steels (SCM440, SCr415 etc.)	150 ~ 300	First choice	AH725	150 (100 - 230)	0.28 (0.2 - 0.5)
		Priority on impact resistance	AH140	120 (80 - 150)	
		Priority on wear resistance	T3130	180 (120 - 250)	
Tool Steels (SK, SKH etc.)	~ 300	First choice	AH725	120 (100 - 180)	0.28 (0.2 - 0.5)
		Priority on impact resistance	AH140	100 (80 - 120)	
		Priority on wear resistance	T3130	120 (100 - 180)	
Stainless steels (SUS304, SUS316 etc.)	-	First choice	AH140	150 (90 - 180)	0.25 (0.17 - 0.45)
Gray cast irons (FC250, FC300 etc.)	150 ~ 250	First choice	AH120	180 (140 - 250)	0.3 (0.17 - 0.6)
Ductile cast irons (FCD400 etc.)		Priority on wear resistance	T1015	200 (150 - 250)	
Aluminum alloys (Si < 13%)	-	First choice	TH10	800 (500 - 1500)	0.25 (0.12 - 0.5)

- To remove excessive chip accumulation use an air blast.
- When chips stick to the cutting edges (aluminium machining), use a water soluble cutting fluid.
- When interrupted cutting or cutting a casting skin, the cutting feed (fz) should be reduced to below the values shown in the above table.

- Cutting conditions are limited by machine power and material rigidity. When the cutting width or depth is large, set Vc and fz below the recommended values and check the machine vibration and spindle load.

NOTES ON USE OF WIPER INSERT

- To achieve a good surface finish, a wiper insert is recommended. (PNCU0905GNER-W)
- When using the wiper insert, install the insert as shown in Fig. C. And be sure that the groove is at the front as shown in Fig. D.
- The wiper insert has two wiping corners. (Fig. D)
- Do not use the other corners. It may break the tool body.



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